A new path estimation strategy for predicting blind persons' motion in indoor environments

ABSTRACT

Research on the characteristics of spatial cognition without vision is used to improve the design of indoor environments to be safer for blind and visually handicapped persons. A fuzzy cognitive map (FCM) decision mechanism is presented for modeling path planning strategies adopted by blind travelers including wall-following, and shortcutting through the environment. A statistical case based reasoning (CBR) strategy is introduced for anticipating the points of switch between the two mentioned behaviours along the path. The combination of CBR and FCM modules provided a robust model of decision making which can be used for predicting blind motions. In this research, 51 eye-masked subjects contributed for obtaining the path patterns and for validating the results obtained using the proposed path prediction approach.

Keyword: Fuzzy cognitive map; Path prediction